5

PATENT SPECIFICATION

736,867

Date of filing Complete Specification: Dec. 31, 1953.

Application Date: Nov. 10, 1952. *No. 28274/52.*

Complete Specification Published: Sept. 14, 1955.

Index at acceptance:—**Class 28(1), H.**

COMPLETE SPECIFICATION

Improvements relating to Chocolate Coating Machines

I, WILLIAM BRINDLE, a British Subject, of 41, Sawley Avenue, Blackpool, Lancashire, formerly of 88, Union Street, Dunstable, Bedfordshire, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to machines for coating comestibles, such as biscuits, confectionery centres, cakes and icecream, with chocolate.

In a known form of chocolate coating machine the articles to be coated are placed by hand on to a moving wire belt and are carried thereby under a curtain of molten chocolate pumped or lifted from a heated and thermostatically-controlled tank below. This coats the top and sides of the articles, the excess chocolate passing back through the wire belt into the tank. The surfaces of the articles in contact with the wire belt may be coated by means of a roller located beneath the belt.

The principal object of the present invention is to provide improved means for raising the molten chocolate from the tank and for coating the under faces of the articles. Other objects are to control the feed of chocolate on to the belt so that it is possible to stop the flow entirely in order to clean the belt, to feed the articles on to the belt automatically thereby ensuring uniformity of feed and maximum coverage of the belt, and to remove excess chocolate from the underside of the coated articles before they pass to the cooling stage.

According to the invention, there is provided a chocolate coating machine wherein the articles to be coated are fed continuously on to a wire conveyor belt on to which a curtain of molten chocolate is caused to fall continuously from a perforated tray located above the belt whereby the articles are coated on their upper and side faces, said tray being continuously supplied with molten chocolate from a tank located beneath the belt, by means of a pair of wheels which are rotatably mounted at the side of the belt and deliver molten chocolate from said tank directly to said tray via openings in its front wall, a trough being located beneath the wire belt to collect molten chocolate passing through the belt and being provided with a roller for forcing molten chocolate back through the under face of the wire belt so as to coat the under faces of the articles on the belt.

Said trough may conveniently be constituted by an inclined plate the lower edge of which engages the roller.

One embodiment of the invention will now be described by way of example with reference to the accompanying drawings, wherein:—

Figure 1 is a perspective view of the machine; and

Figure 2 is a side elevation on a larger scale.

The machine comprises an endless wire belt 10 which passes round rollers 11 which are driven in any convenient manner.

A curtain of molten chocolate 17 is caused to fall on to the belt from a perforated tray 19 located above the belt, the tray being supplied with molten chocolate from a tank 20, located beneath the belt, by means of a pair of wheels 21 mounted on a shaft 12 journalled in bearings 13, said wheels dipping into the tank 20, and being provided with openings 22 in its front wall through which the chocolate is discharged from the wheels, the chocolate falling from the tray via openings 23 in the base thereof. The tray 19 is pivotally mounted along its rear edge 24 so that it may be raised into a position in which it is no longer receiving chocolate from the wheels 21. The belt 10 may then be cleaned by means of an air blower 25 located forwardly of the trough. The elevation of the tray may conveniently be effected by means of an operating arm 26 attached to the tray and extending to the front of the machine.

As the articles 18 to be coated pass beneath the curtain of molten chocolate 17, they are coated on their upper and side faces. Located beneath the belt 10 is an inclined plate 14 which is in contact along its lower edge with a roller 15 which is mounted on the shaft 12 and rotates therewith. The roller 15 and plate 14 together form a trough for collecting molten chocolate passing through the belt 10. The roller 15 is in engagement with the under face of the belt 10 and molten chocolate is forced through the belt

by the roller, thereby coating the under faces of the articles on the belt.

The articles 18 are fed on to the wire belt from one or more vertical hoppers 27 by means of a reciprocating plate 28 which is located beneath the hopper or hoppers a sufficient distance to allow one article to be moved from each hopper on to the belt with each forward throw of the plate. The plate 28 is actuated by any convenient driving mechanism. As shown, the plate 28 is attached to an arm 29 which makes a pin and slot connection with a lever 30 attached to a driving pulley 31. If a plurality of hoppers are provided as shown, they are conveniently assembled as a unit on a front plate 32 whereby the unit may be easily attached at the front of the machine and may easily be removed when it is necessary to fit hoppers of different sizes and shapes depending upon the nature of the articles being coated. Conveniently also, the operating arm 26 for the chocolate trough passes through an opening 33 in the front plate 32.

As the articles pass on to the wire belt, they are caused to brush over the upper end of an inclined plate 34 whereby any crumbs or small particles adhering to the under face of the articles are held back by the plate 34 and caused to fall into a receptacle 35 located beneath the lower end thereof. It is important to remove such particles since otherwise they find their way into the chocolate via the belt and form a coagulated sediment in the chocolate tank thereby rendering the chocolate unfit for coating.

A roller 36 of the same width as the belt is mounted at the forward end of the belt and just below the level thereof, said roller serving to wipe off excess chocolate from the under face of the articles before they are transferred to the cooler belt 37. The roller 36 is supported at its end in bearing plates 38 which are adjustable in height and is driven from the forward belt driving roller 11 by means of a belt 39.

What I claim is:—

1. A chocolate coating machine, wherein the articles to be coated are fed continuously on to a wire conveyor belt on to which a curtain of molten chocolate is caused to fall continuously from a perforated tray located above the belt whereby the articles are coated on their upper and side faces, said tray being continuously supplied with molten chocolate from a tank located beneath the belt, by means of a pair of wheels which are rotatably mounted at the side of the belt and deliver molten chocolate from said tank directly to said tray via openings in its front wall, a trough being located beneath the wire belt to collect molten chocolate passing through the belt and being provided with a roller for forcing molten chocolate back through the under face of the wire belt so as to coat the under faces of the articles on the belt.

2. A chocolate coating machine according to Claim 1, wherein said trough is constituted by the roller and an inclined plate the lower edge of which engages the roller.

3. A chocolate coating machine according to Claim 1 or 2, wherein said tray is pivotally mounted along its rear edge so that it may be raised into a position in which it is no longer receiving chocolate from the wheels.

4. A chocolate coating machine according to any of Claims 1 to 3, wherein the roller for forcing the chocolate through the under face of the belt and the wheels for supplying chocolate to the tray, are mounted on a common shaft.

5. A chocolate coating machine according to any one of the preceding Claims, wherein the articles to be coated are fed onto the wire belt from one or more vertical hoppers by means of a reciprocating plate which is located beneath the hopper or hoppers a sufficient distance to allow one article to be moved from each hopper on to the belt at each forward throw of the plate.

6. A chocolate coating machine according to Claim 5, wherein a plurality of hoppers are provided, said hoppers being assembled as a unit on a front plate.

7. A chocolate coating machine according to any one of the preceding Claims, wherein as the articles pass on to the wire belt, they are caused to brush over the upper end of an inclined plate whereby any crumbs or small particles adhering to the under face of the articles are removed by said plate.

8. A chocolate coating machine according to any one of the preceding Claims, wherein a roller of the same width as the belt is mounted at the forward end of the belt and just below the level thereof, so as to wipe off excess chocolate from the under face of the articles before they are transferred to a cooler belt.

9. A chocolate coating machine substantially as hereinbefore described and as shown in the accompanying drawings.

KINGS PATENT AGENCY LIMITED,
By B. T. KING,
Director,
A.I.Mech.E.,
Registered Patent Agent,
146A, Queen Victoria Street, London, E.C.4,
Agents for the Applicant.

PROVISIONAL SPECIFICATION

Improvements relating to Chocolate Coating Machines

I, WILLIAM BRINDLE, a British Subject, of 88, Union Street, Dunstable, Bedfordshire, do hereby declare this invention to be described in the following statement:—

This invention relates to machines for coating comestibles, such as biscuits, confectionery centres, cakes and icecream, with chocolate.

In a known form of chocolate coating machine

the articles to be coated are placed by hand on to a moving wire belt and are carried thereby under a curtain of molten chocolate pumped or lifted on to a rotating drum from a heated and thermostatically controlled tank below. This coats the top and sides of the articles, the excess chocolate passing back through the wire belt into the tank. The articles are then carried over a small reservoir of chocolate which coats their undersurface and finally under a variable speed warm air blower which blows off the excess chocolate from the top and sides.

The principal object of the present invention is to enable the articles to be completely coated with chocolate in a single operation. Other objects are to control the feed of chocolate on to the belt so that it is possible to stop the flow entirely in order to clean the belt, to feed the articles on to the belt automatically thereby ensuring uniformity of feed and maximum coverage of the belt, and to remove excess chocolate from the underside of the coated articles before they pass to the cooling stage.

According to the invention, a chocolate coating machine comprises a wire belt on to which the articles to be coated are fed continuously, said belt being used to pass over a transverse member having in the direction of movement of the belt, first an upwardly inclined portion and then a downwardly inclined portion, said inclined portions being connected by a channel portion housing a roller beneath which the belt passes, a curtain of molten chocolate being caused to fall approximately on to the upper end of said upwardly inclined portion whereby the weight of the chocolate running on to the trailing end of the articles is sufficient to tilt the articles so that they pass over said roller and thereby become coated on their under face, the leading end of the articles being then picked up by the belt which drags the articles over the roller thereby completing the coating of the under face.

The curtain of molten chocolate is caused to fall on to the belt from a perforated trough located above the belt, said trough being conveniently supplied with molten chocolate from a tank located beneath the belt by means of a pair of wheels at the side of the belt and dipping in to said tank, said trough being provided with openings in its front wall through which the chocolate is discharged from the wheels. According to a further feature of the invention, said trough is pivotally mounted along its rear edge so that it may be raised into a position in which it is no longer receiving chocolate from the wheels. The wire belt may then be cleaned by means of an air blower located forwardly of the trough. The elevation of the trough may conveniently be effected by means of an operating arm attached to the trough and extending to the front of the machine.

According to a further feature of the invention the articles to be coated are fed to the wire belt from one or more vertical hoppers by means of a reciprocating plate which is located beneath the hopper or hoppers a sufficient distance to allow one article to be moved from each hopper on to the belt with each forward throw of the plate. The reciprocating plate is actuated by any convenient driving mechanism which may for example comprise a driving pulley and lever. If a plurality of hoppers are provided, they are conveniently assembled as a unit on a front plate whereby the unit may be easily attached at the front of the machine and may easily be removed when it is necessary to fit hoppers of different sizes and shapes depending upon the nature of the articles being coated. Conveniently also, the aforesaid operating arm for the chocolate trough passes through said front plate.

According to yet another feature of the invention, as the articles pass on to the wire belt, they are caused to brush over the upper end of an inclined plate whereby any crumbs or small particles adhering to the under face of the articles are held back by said plate and caused to fall into a receptacle located beneath the lower end thereof. It is important to remove such particles since otherwise they find their way into the chocolate via the belt and form a coagulated sediment in the chocolate tank thereby rendering the chocolate unfit for coating.

According to yet another feature of the invention, a roller of the same width as the belt is mounted at the forward end of the belt and just below the level thereof, said roller serving to wipe off excess chocolate from the under face of the articles before they are transferred to the cooler belt. Said roller is supported at its ends in bearing plates which are adjustable in height and is driven from the forward belt driving roller.

KINGS PATENT AGENCY LIMITED,
By
B. T. KING,
Director,
A.I.Mech.E.,
Registered Patent Agent,
146A, Queen Victoria Street, London, E.C.4,
Agents for the Applicant.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.—1955.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

FIG. 1.

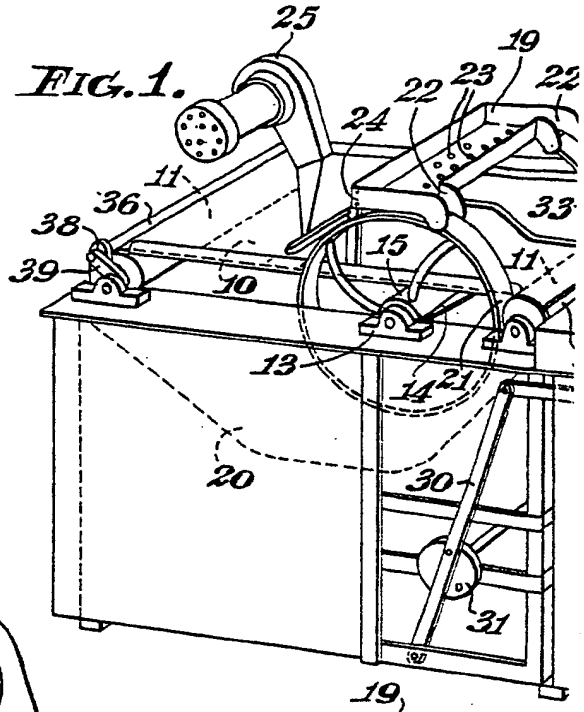
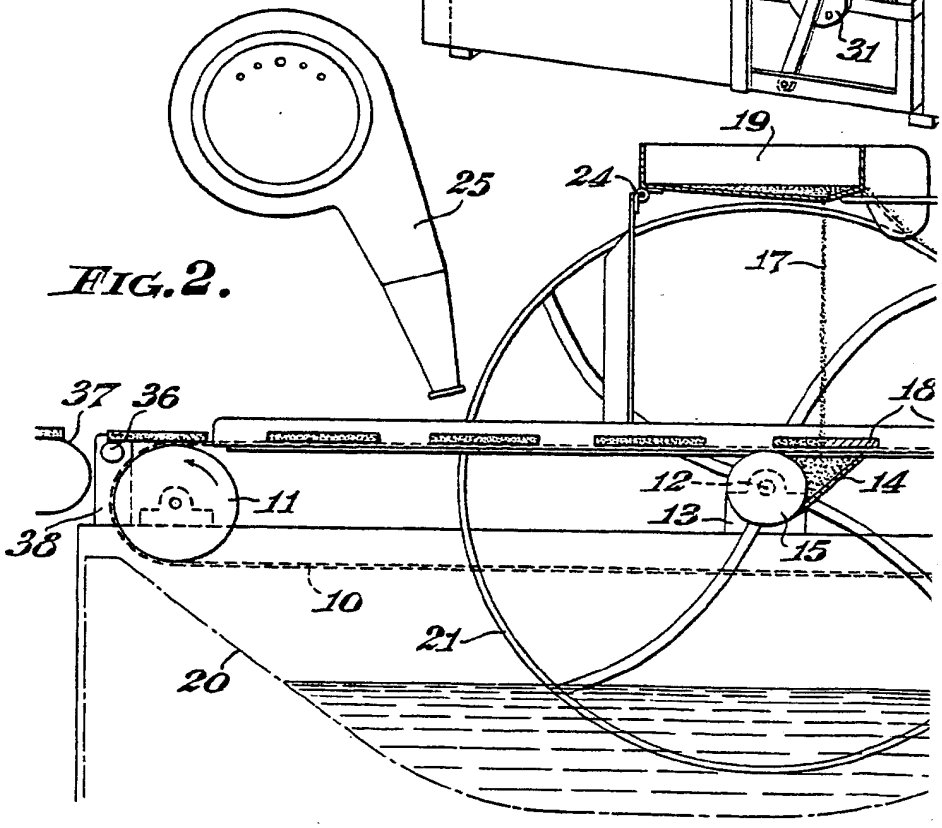


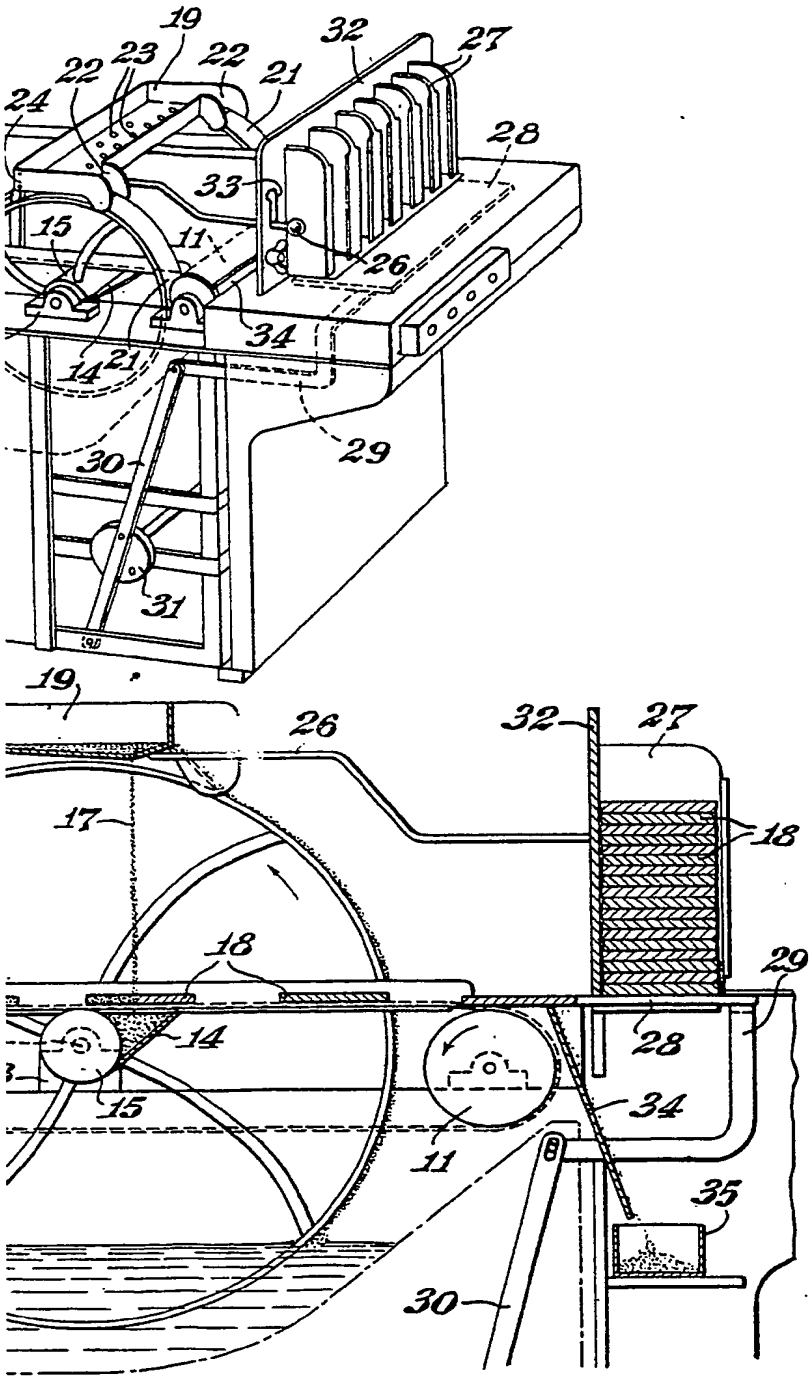
FIG. 2.



736,867 COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.



BEST AVAILABLE COPY

736,867 COMPLETE SPECIFICATION
1 SHEET This drawing is a reproduction of the Original on a reduced scale.

FIG. 1.

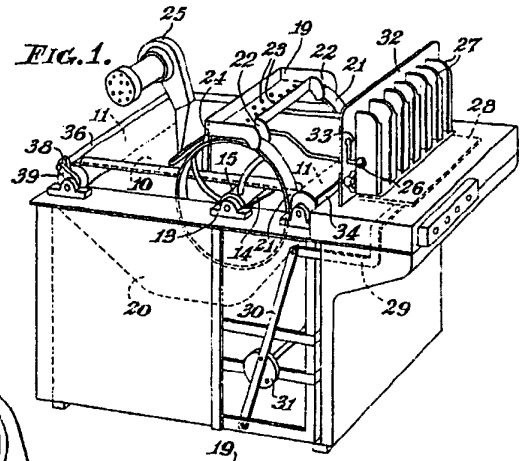


FIG. 2.